



Restoring old Photographs

Old photographs are fascinating on several levels. For some the age of the photo and the extent to which it is “distressed” – faded, stained, scratched, and otherwise physically damaged – become a major part of what they like. Artists will often take a modern photo and intentionally damage it to give it that “old photo” look. We want to do the opposite.

The most interesting part of the old photos is what they show. They are images from the past; the closest we can come to time traveling back to a previous era. So, not unlike my contemporary black and white landscape photos, where I try to give people a window into a B&W reality, I’ve tried to make these restorations windows into Solvang’s past. We want these windows to the past as clear as possible, and we want them to stay that way for many years.

Scanning

Without going to much into the technical side of preparing the photo for digital restoration, here is some of the major point you need to pay attention to for the best results.



Resolution:

With scanning, the goal is simply to capture as much information from the photo as possible. In order to accomplish this we need to change the optical scanning settings of the scanner to maximum DPI (dots per inch). Each scanner has a different capability when it comes to this setting. Most scanners has a DPI of 300 dpi – 700 dpi. If your scanner has a larger DPI setting, please use it. (Remember that the larger this setting, the larger the file becomes.) If you are using a photo scanner, the dpi can go into the 4000’s. Using the maximum DPI setting, you ensure that you capture as much information on the image as possible.

Bit Depth and colour:

This refers to the amount of colours that is captured in the scanning process:

8 bits per channel:

Using this setting will capture 256 shades of grey.

16 bits per channel:

This setting will capture 30 000 shades of grey and is the preferred setting to capture fine details contained in the photo.



Colour v. Grayscale:

The main reason to scan a B&W photo in RGB (24 bit colour- 16 777 216 colours) mode is to remove stains. These are often a different colour than the rest of the image. This colour differential can be useful in removing the stain.

File Type:

.Tiff file types are the most widely supported and do not compress the image. A file format like .Jpeg compresses the file and will cause image information to be lost.

Background:

Placing a green or blue paper behind a torn photo when scanning on a flatbed scanner (like a green-screen), will help in the repairing process.

Image Editing-Retouching

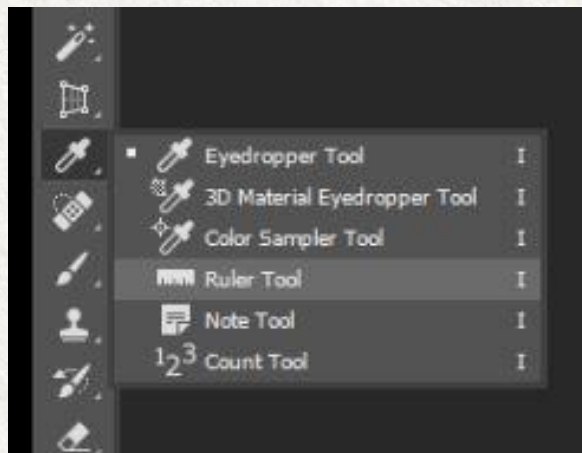
This is where the fun starts. Photoshop is the industry standard image editing software that is use to retouch and clean up images. While it has some powerful tools, there is no simple way of doing the restoration. Most of the restoration work is a timeous and meticulous process. The Photoshop “filters” that remove small spots and scratches cannot distinguish the valid image information from the distracting noise. So, they have to be used very sparingly and applied selectively.

P.S. Always work with a copy of the scanned image and retain the original scanned image for backup.

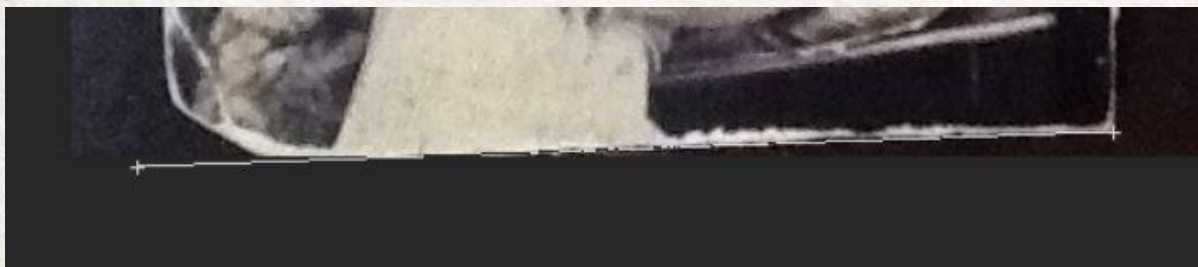
Some of the primary tools and methods is as follows:

Straightening:

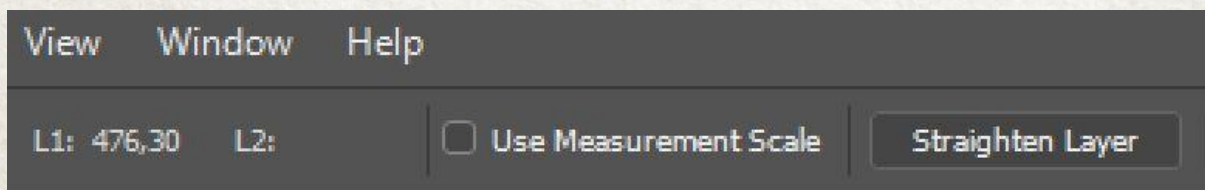
Often images are rotated that, for example, the horizon in the photo is not level or vertical. Using the “ruler tool” found in the “eye dropper” section on Photoshop, this can be rectified.



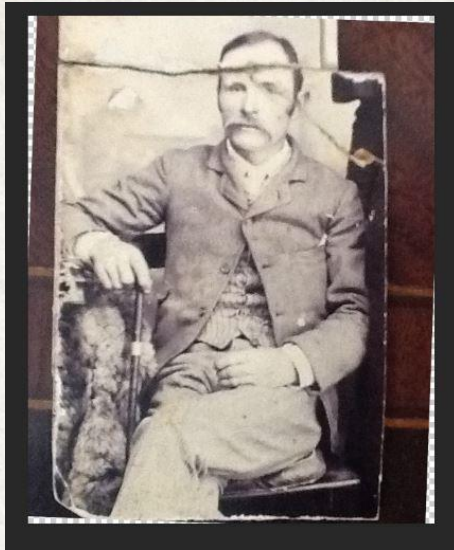
Place the ruler cross-mark on the horizon (or vertical) reference, hold down the mouse button, and draw a line along the reference edge.



After the line is drawn with the Ruler tool, press the “Straighten Layer” button at the top of the Photoshop screen.



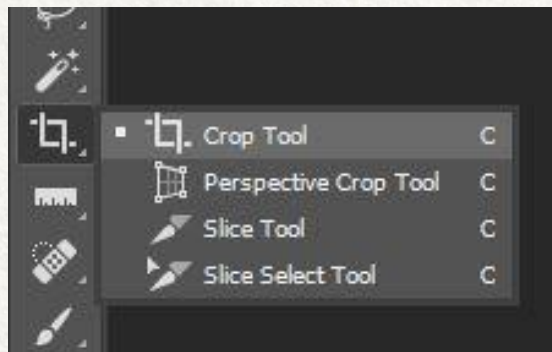
Photoshop will straighten the horizon (or vertical line) and crop the image appropriately.



P.S. This tool is only available on the CS5 and later versions of Photoshop. For earlier versions, the Image Rotation can be done using the cropping method.

Cropping:

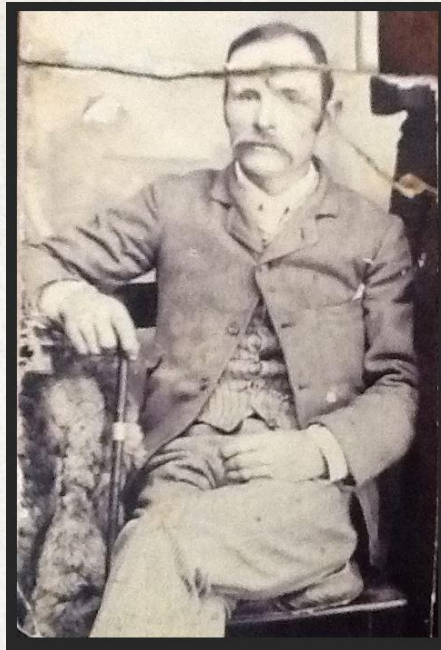
Choose the cropping tool from the tool selection menu.



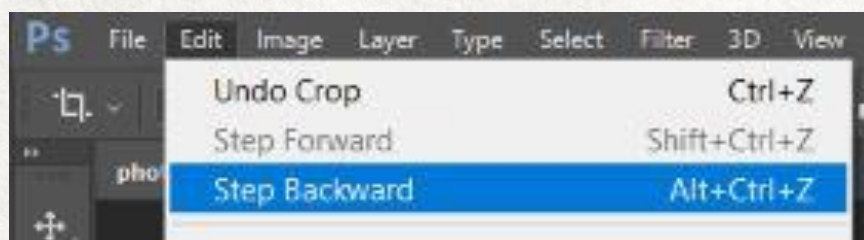
Draw a rectangle on the image that you want to keep.



You will now be left with an image on the photo that can be restored.



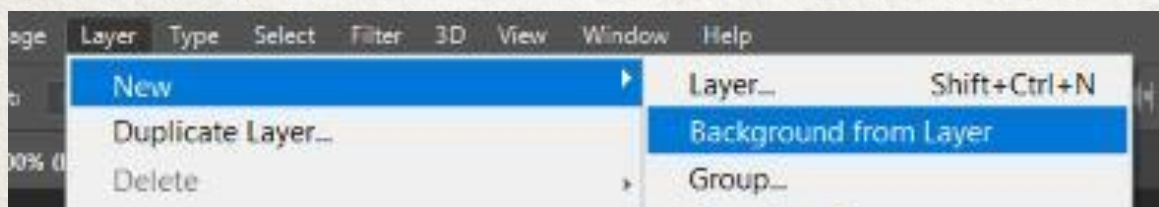
For those not familiar with Photoshop, a very basic tool that is used constantly is the PS equivalent of “undo.” This is “Edit>Step Backward.” Above it is “Step Forward.” With these 2 tools you can go back and forth to be sure the effect you just applied is a good one.



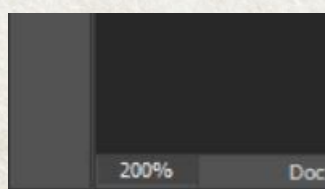
P.S. At this stage it would be a good idea to save a copy of this working image. This will be the basic image that you will be working with and if anything goes wrong, you would be able to go back to this image and retry.

Torn Repair :

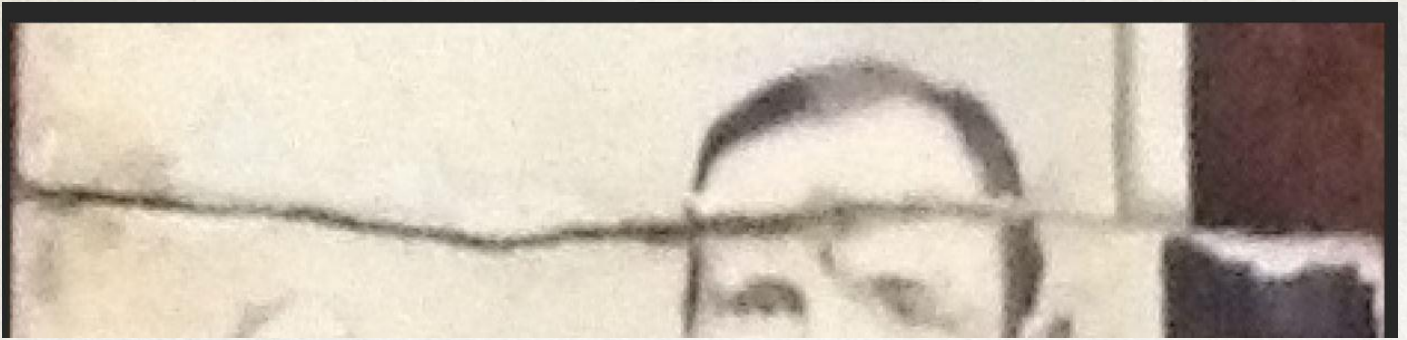
First we need to create a uniform background to the image (remove the transparent background). Select (Layer>New>Layer From Background).



Increase the zoom factor so that you can see the complete torn closely.



The complete torn is now visible.



Now use the lasso tool and select the torn piece to move. Select as closely as possible to the visible image.



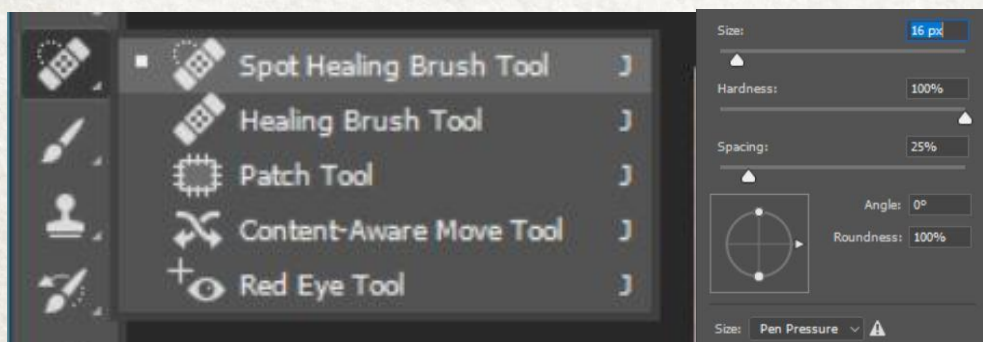
Now using the move tool, move the piece into place.



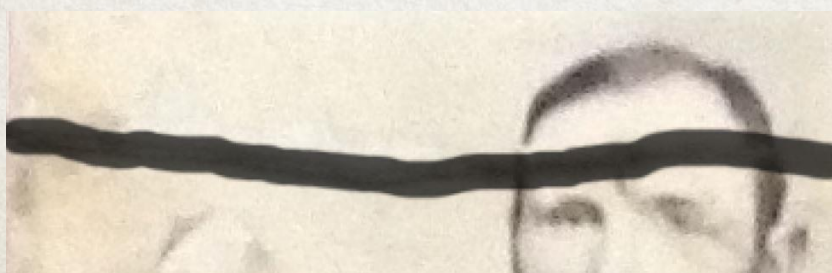
P.S. The edges might seem blurry, do not worry. We will fix this next.

Fix the Torn Pieces

Select the spot healing brush from the tools and increase / decrease the brush size so that the brush is just wider than the tore.



Now draw the healing brush across the torn mark

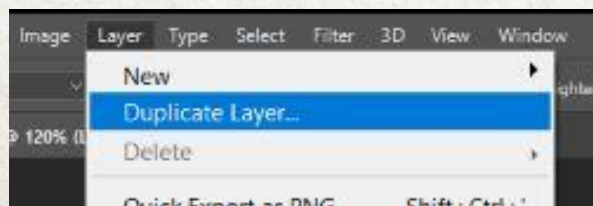


Repeat the process to all the affected areas to obtain the best possible image.



Duplicate Layers

Because most tools and effects are best used selectively, you need to make a duplicate layer to work on. (Layer>Duplicate Layer).



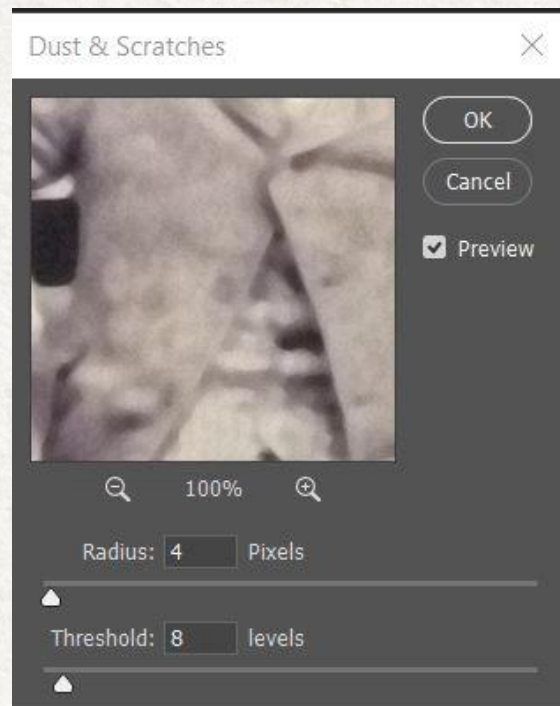
The effects are then applied to the lower layer. This might involve sharpening, softening, curves, or any number of other effects.

Once the effect has been applied to the lower layer, the top layer is made the active one and the effects on the lower duplicate layer are applied completely or incrementally in small steps via the “Eraser” brush. This “erases” the top, active layer and exposes the layer with the change.

Name the new layer “Dust&Scratch”.

Dust & Scratches

One of the fastest ways to clean up an old photo is to apply a PS filter called “Dust and Scratches.”
(Filters>Noise>Dust & Scratches)



By setting the “radius” different sizes of defects are removed. Start at a radius of one on a duplicate layer. Then apply a larger radius Dust & Scratches and apply that to only the large defect, often in the shadows or plain skies.

Altering Contrast & Colour

Next we want to make this photo a uniform sepia tone. In this section we’ll convert the image to grayscale and add our own colour back in. We’ll do this using layers, so it’s completely non-destructive.

Go to Layer > New Adjustment Layer > Gradient Map.

Name it make grayscale and click OK.

In the Properties panel, if the Black, White gradient isn’t already chosen then click on the menu arrow (shown below) and choose the Black, White gradient (third from the top left).

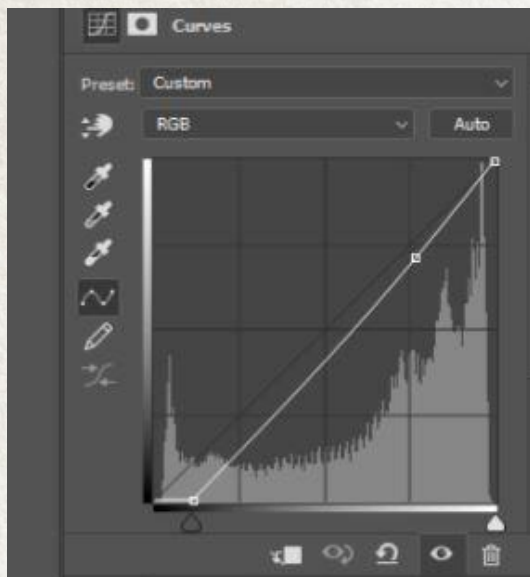


This image needs darker blacks and more contrast. Go to

Layer > New Adjustment Layer > Curves.

Name it contrast and click OK.

In the Properties panel, we want to adjust the curve as shown below:



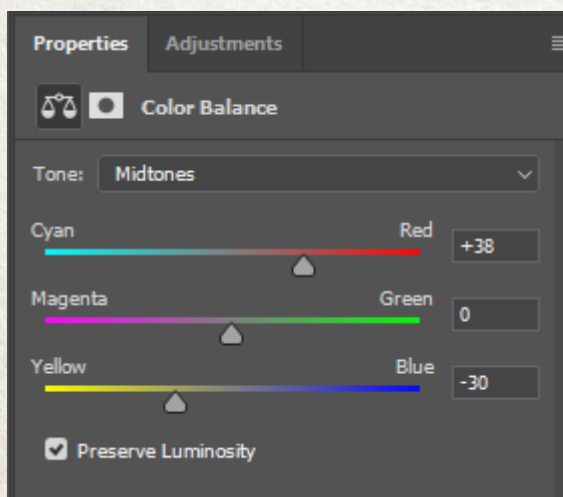
Move the black point (on the bottom left) over to the right to deepen the blacks.

Brighten the highlights by adding a point near the highlights (towards the top right) and dragging up (as shown in the screenshot above).

To add a sepia tone, go to Layer > New Adjustment Layer > Colour Balance.

Name it sepia tone and click OK.


In the Properties panel, make a nice sepia tone using the settings shown below:



Let's see the progress we've made so far. To do this we'll put all the retouching layers into a group. In the Layers panel, if it's not still selected, select the sepia tone layer.

Shift-click on the make grayscale layer to select the three adjustment layers.

Hit or Ctrl-G to group them.

Hide & show () the photo restoration group to see the before and after.

Hand retouching


The rest of the retouching will be done by hand using a combination of techniques.

Make sure the remove dust & scratches layer is selected.

Duplicate it by hitting **Cmd-J** or **Ctrl-J**.


Name the new layer more retouching.


The process of removing the remaining scratches and blotches will take a little while. As you work, we recommend hiding/showing the retouching layer to see your progress. Remove the remaining marks using a combination of the following:

Use content-aware fill or the Patch tool () to fix the larger areas.

Select a portion of the image and run the Dust & Scratches filter on it.



A Radius of 8 and Threshold of 10 works well on some of the larger white scratches.

The Spot Healing Brush tool () for smaller, easy to remove scratches and small blotches. TIP: To remove straight line scratches: click at one end, then **Shift-click** at the other end.

The Healing Brush tool () to remove scratches and blotches that are more challenging.

Make sure in the Healing Brush options at the top of the screen that Sample: is set to Current Layer.

To use the Healing Brush you **Option-click** or **Alt-click** on a part of the image that looks good, then paint over the bad area.

An important step for this image is to use the Dodge () and Burn () tools to help redefine edges/hide scratch marks. Darkening an edge can define it and make it appear sharper. Use this technique to help define or even recreate details that have been lost. Keep in mind that photos are just light and shade. If something isn't there, you can create it yourself. In the example below, we made the lapel and vest more defined by enhancing the highlights and shadows. Using a pressure-sensitive Wacom tablet can help a lot!

Final Sharpening

Once you are satisfied with the retouching, do a **Select > All (Ctrl-A)**.

Go to **Edit > Copy Special > Copy Merged**.

Select the top layer.

Do an **Edit > Paste**.

Name the new layer sharpened.

Go to **Filter > Sharpen > Smart Sharpen**.

We found the following settings worked well for our final retouched image, but feel free to adjust as needed:

Amount: 60

Radius: 3

Reduce Noise: 13%

Remove: Lens Blur

Click OK and you're done!

Conclusion

Many hours can be spent in retouching photos and an extensive knowledge of Photoshop will help you in doing the best job possible. Invest in some Photoshop training (either formal or online).



Before



After